

Serial Number 10/028,763

- Page 3, lines 13-26
- Page 4, lines 1-14

IN THE ABSTRACT:

Please amend the abstract as indicated by the clean copy in Appendix E and the marked-up copy in Appendix F, attached hereto.

REMARKS

Reconsideration of the application is respectfully requested for the following reasons:

1. Formalities

The specification and abstract have been revised to place the application in proper U.S. format and correct various grammatical and idiomatic errors. In addition, the word "elastic" has been added to the description of the material of the race, support for the addition being provided by the description of the material as "rubber," and the "almost or slightly in contact" description has been amended to point out that the circumferential edge of the race is in "elastic contact" with the shaft seat, support for the amendment being provided by the fact that the edge of the shaft seat is elastic.

Because the changes are supported by the original specification or are formal in nature, it is respectfully submitted that the changes do not involve new matter.

2. Rejection of Claims 1-7 Under 35 USC §112, 2nd Paragraph

This rejection has been addressed by deleting the phrase "dustproof and oil leakproof."

Nevertheless, it is respectfully noted that the claimed race does in fact provide a dust and leak proof seal, due to the "elastic contact" between the race and the shaft seat. Basically, the race is tightly fitted to the shaft so that it rotates with the shaft, but is permitted to rotate relative to the shaft seat while maintaining a minimum gap due to the thinness and elasticity of the

circumferential edge of the race. In addition, the inclined shape of the circumferential edge, specifically recited in new claim 8, serves to guide lubricant flow into the bearing and further prevent leakage.

The reason that the word "almost" was originally used to describe the contact is that the contact is not continuous. Instead, a gap may often exist between the race and the shaft seat. However, such a minimal gap is unlikely to permit oil droplets to escape or dust to enter, and therefore the seal may reasonably be characterized as dust and leak proof.

3. Rejection of Claims 1, 4, 5, and 7 Under 35 USC §102(b) in view of U.S. Patent No. 4,571,011 (Muto)

This rejection is respectfully traversed on the grounds that the Muto patent fails to disclose or suggest a race made of elastic material that rotates with the shaft and whose circumferential edge faces and is in "elastic contact" with the *inner* wall of the shaft seat, as recited in claim 1, or the elastic race with an inclined circumferential edge as recited in new claim 8. Instead, element 23 of Muto, which has been interpreted as corresponding to the claimed "race," is a scraper provided with a non-elastic scraping portion 23a, as explained in col. 4, lines 57-62 of Muto ("*The annular member 23 with the scraping portion 23a is made of a non-elastic material which is advantageous for the formation of the edge 23b, has dimensional stability, wear resistance and low frictional resistance. . .*"). This scraping portion is not in any sort of contact with the shaft seat, much less elastic contact.

Because the Muto patent does not disclose or suggest all elements recited in independent claim 1, from which claims 2-8 depend, and in particular the elastic nature of the race and the manner in which the race faces and is in contact with the inner wall of the shaft seat, it is respectfully submitted that the rejection under 35 USC §102(b) is improper and withdrawal of the rejection of claims 1, 4, 5, and 7 is respectfully requested.

4. Rejection of Claim 2 Under 35 USC §103(a) in view of U.S. Patent Nos. 4,571,011 (Muto) and 6,024,496 (Shy)

This rejection is respectfully traversed on the grounds that the Shy patent, like the Muto patent, fails to disclose or suggest an elastic race of the type claimed, which rotates with the shaft and has a circumferential edge that faces and is in "elastic contact" with the shaft seat to maintain at most a minimum gap. Instead, the ring seal 94 of Shy appears to be stationary relative to the shaft seat, the grooves 42 being provided not only on the outer circumference of the "seal 41," but also on the inner periphery, thereby enabling the shaft to rotate relative to the seal in conventional fashion.

Because neither the Muto patent nor the Shy patent discloses or suggests an arrangement in which a rotating race is in elastic contact with the shaft seat, as claimed, withdrawal of the rejection of claim 2 under 35 USC §103(a) is respectfully requested.

5. Rejection of Claim 3 Under 35 USC §103(a) in view of U.S. Patent Nos. 4,571,011 (Muto) and 4,613,288 (McInerney)

This rejection is respectfully traversed on the grounds that the McInerney patent, like the Muto patent, fails to disclose or suggest an elastic race of the type claimed, which rotates with the shaft and has a circumferential edge that faces and is in elastic contact with the shaft seat. Instead, McInerney discloses a "thrust bearing" 82 which requires oil to be present between the ends of the bearing and the housing. As a result, inclusion of an elastic race of the type claimed, which would seal the end of the housing, would render the turbocharger of McInerney inoperative.

Because neither the Muto patent nor the McInerney patent discloses or suggests an arrangement in which a rotating race is in elastic contact with the shaft seat, as claimed, withdrawal of the rejection of claim 3 under 35 USC §103(a) is respectfully requested.

Serial Number 10/028,763

6. Rejection of Claim 6 Under 35 USC §103(a) in view of U.S. Patent Nos. 4,571,011 (Muto) and 6,020,664 (Liu)

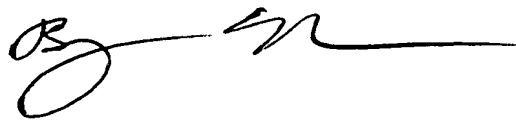
This rejection is respectfully traversed on the grounds that the Liu patent, like the Muto patent, fails to disclose or suggest an elastic race of the type claimed, which rotates with the shaft and has a circumferential edge that faces and is in elastic contact with the shaft seat. To the contrary, the "tapered" element of 35 of Liu is not a race, does not rotate with the shaft, and has nothing to do with preventing leaking of oil or dust. Instead, element 35 of Liu is a thrust bearing plate for stabilizing the rotor by cooperating with bearing sleeve members 26 and 27. The tapered shape of element 35 has to do with aerodynamics, and not with forming an elastic contact with the inner wall of a shaft seat.

Because neither the Muto patent nor the Liu patent discloses or suggests an arrangement in which a rotating race is in elastic contact with the shaft seat, as claimed, withdrawal of the rejection of claim 6 under 35 USC §103(a) is respectfully requested.

Having thus overcome each of the rejections made in the Official Action, withdrawal of the rejections and expedited passage of the application to issue is requested.

Respectfully submitted,

BACON & THOMAS, PLLC



By: BENJAMIN E. URCIA
Registration No. 33,805

Date: July 7, 2003

BACON & THOMAS, PLLC
625 Slaters Lane, 4th Floor
Alexandria, Virginia 22314
Telephone: (703) 683-0500

NWB:S:\Product\New\Pending A...1\NINIORNG028763\w01.wpd

APPENDIX B
(Marked-Up Copy Of Amended Claims)

1. (Amended) A [dustproof and oil leakproof structure of a] bearing structure, comprising: a shaft seat having a bearing provided therein, and a rotation shaft rotatably mounted in the bearing, the improvement comprising: a race [is] formed with a hole [closely combined on], the shaft fitting tightly through the hole such that the race rotates with the rotation shaft and is located above the bearing, and a circumferential edge of the race faces and is [in] almost or slightly in contact with [the] an inner wall of the shaft seat,

wherein said race is made of an elastic material such that any contact between said race and said inner wall of the shaft seat is an elastic contact.

2. (Amended) The [dustproof and oil leakproof structure of a] bearing structure as claimed in claim 1, wherein the rotation shaft has an annular groove for a snapping connection of a snap member.

3. (Amended) The [dustproof and oil leakproof structure of a] bearing structure as claimed in claim 1, further comprising at least one washer mounted on the rotation shaft between the race and the bearing in a loose fit manner.

4. (Amended) The [dustproof and oil leakproof structure of a] bearing structure as claimed in claim 1, wherein the thickness of the circumferential edge of the race is smaller than that of the mediate portion of the race.

5. (Amended) The [dustproof and oil leakproof structure of a] bearing structure as claimed in claim 4, wherein the thickness of the mediate portion of the race is gradually tapered toward the circumferential edge of the race.

Serial Number 10/028,763

6. (Amended) The [dustproof and oil leakproof structure of a] bearing structure as claimed in claim 4, wherein the circumferential edge of the race is formed with the same thickness, and is mounted on the middle of the mediate portion of the race in an annular manner.

7. (Amended) The [dustproof and oil leakproof structure of a] bearing structure as claimed in claim 4, wherein the circumferential edge of the race is formed with the same thickness, and is mounted on an end edge of the mediate portion of the race in an annular manner.

APPENDIX D
(Marked-Up Copy Of Amended Paragraphs)

Page 1, lines 9-18:

As shown in Fig. 7, the prior art [aware] of which applicant is aware comprises a housing body 91, and a fan blade member 92. The hub of the fan blade member 92 has a rotation shaft axially protruded with an oil stop cylinder 94 which encloses the top section of the rotation shaft. The bottom of the oil stop cylinder 94 [is rested] rests on the shaft seat 95, and is enclosed by the top end edge of the shaft seat 95. Thus, when the fan blade member 92 is driven to rotate, the lubricating oil between the rotation shaft 93 and the bearing 96 sputtering upward and outward along the rotation shaft 93 dues to the action of the centrifugal force may be stopped by the oil stop cylinder 94, and may be introduced to flow back between the rotation shaft 93 and the bearing 96.

Page 3, lines 13-26:

The rotation shaft 12 located above the bearing 11 is fitted with a race 2, and at least one washer 15. The race 2 has a circular shape, and has a central portion formed with a hole 21 [which] so that the race is closely fitted on the rotation shaft 12 to integrally rotate with the rotation shaft 12. The circumferential edge 22 of the race 2 and the inner wall of the shaft seat 1. The race 2 is preferably made of a soft elastic material such as a rubber so that any contact between the circumferential edge 22 and the inner wall of the shaft seat 1 is an elastic contact. The thickness of the circumferential edge 22 of the race 2 is smaller than that of the mediate portion of the race 2, and the thickness of the mediate portion of the race 2 is gradually tapered toward the circumferential edge 22 of the race 2. At least one washer 15 is mounted between the race 2 and the bearing 11, thereby preventing [the] friction from [producing] being produced between the race 2 and the bearing 11. The washer 15 and the rotation shaft 12 may form a loose fit.

Page 4, lines 1-14:

Referring to Figs. 2 and 3, the race 2 and the washer 15 are combined on the rotation shaft 12 and in the shaft seat 1. The hole 21 of the race 2 [is closely combined on] extends closely around the rotation shaft 12, and the circumferential edge 22 of the race 2 is [in] almost or slightly in contact with the inner wall of the shaft seat 1. Thus, [the] a minimum gap is formed between the circumferential edge 22 of the race 2 and the inner wall of the shaft seat 1. Thus, the race 2 may have a better dustproof effect. When the rotation shaft 12 is rotated, the lubricating oil between the rotation shaft 12 and the bearing 11 sputtering upward and outward along the rotation shaft 12 due to the action of the centrifugal force may be stopped by the race 2, and may move downward along the contact face of the bearing 11 and the inner wall of the shaft seat 1 to be recycled. In addition, at least one washer 15 is mounted between the race 2 and the bearing 11, and the washer 15 and the rotation shaft 12 may form a loose fit. Thus, the wear between the race 2 and the bearing 11 may be reduced.

Serial Number 10/028,763

APPENDIX F
(Marked-Up Copy Of Amended Abstract)

A dustproof and oil leakproof structure of a bearing includes a shaft seat having a bearing provided therein, and a rotation shaft rotatably mounted in the bearing. The characteristic is [in] that[, a] an elastic race is formed with a hole such that the race is closely combined on and rotates with the rotation shaft located above the bearing, and a circumferential edge of the race is [in] almost or slightly in contact with the inner wall of the shaft seat.